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FINANCIAL MARKETS AND CORPORATE FINANCE: BEYOND THE CRISIS

Relationship between Corporate Governance Quality and Information Asymmetry an Econometric Analysis

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Introduction

- **Main Purpose:**
  - How affect the new regulations about Corporate Governance and IFRS adoption, to asymmetry of information ?
  - To show that different methods for calculating the spread (Bid- Ask) and the methods for annualizing the intraday data affect the results of econometrics models

- **Context is:**

1. The International Financial Reporting Standards (IFRS) adoption
2. The reduction of information asymmetry due to new corporate governance standards, and the ownership concentration that characterize the Chilean Capital Market
3. We test the quality of the information delivered to the market using two information disclosure indices (DIS and Botosan)

Introduction

- **The paper contributes to the literature by analizing that the definition of spread is not neutral and may affect the robustness of the different models we analyze**

- **Main Markets Characteristics**:

1. the average ownership share of the majority shareholder of the 40 stocks on the Selective Stock Price Index (IPSA, in Spanish) is 41%, whereas in a random sample of 100 companies from the S&P 500, this share amounts to only 9%
2. the average ownership among the first five shareholders of companies that constitute the IPSA is 69%
3. Chile has pass three acts to improve the capital market and strengthen corporate governance, MKI 2001, MKII 2007 and MKIII 2010
4. the Superintendence of Securities and Insurance (SVS, in Spanish) plays an important role in issuing regulations that require sound practices in legal and corporate governance

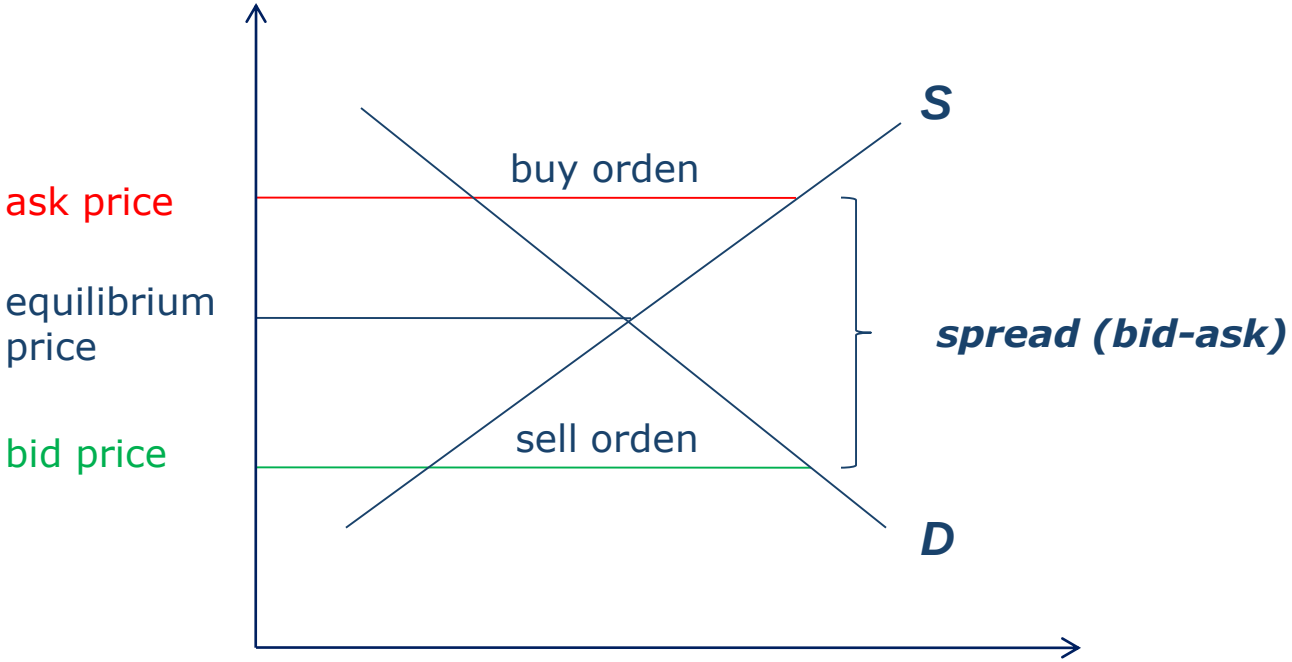
Introduction

- **Economic theory associated with managing organizations**
  - separation of ownership and company leadership
  - not alignment of objectives between management and investors
  - Theory of Firms (Jensen & Meckling, 1976), is strongly linked with asymmetries in corporate information

- **An indirect means of measuring the information asymmetry is the bid-ask spread of stock prices**
  - A larger spread is associated with greater information asymmetry (Amihud & Mendelson, 1989; Coller & Yohn, 1997; Kim & Verrecchia, 1994; Bollen, Smith & Whaley, 2004)
  - The evidence suggests that the spread is smaller when there is more information available (Copeland & Galai, 1983; Glosten & Milgrom, 1985)
  - Financial analysts draw greater spreads when they perceive that there is more information asymmetry (Kim & Verrecchia, 1994; Coller & Yhon, 1997)

Introduction

- **In a fully active market naturally form an equilibrium price between supply and demand, when that does not happen the bid price and the ask price arises**



Introduction

Table 1.Main measures on the spread observed in the financial literature

Absolute ($)	Relative (%)
(PV-PC)	$\frac{(PV-PC)}{\frac{(PV+PC)}{2}}$, ln(PV)-ln(PC)
Original scale	**Modified scale**
(PV-PC), $\frac{(PV-PC)}{\frac{(PV+PC)}{2}}$	ln(PV-PC), $\frac{(lnPV-lnPC)}{\frac{(lnPV+lnPC)}{2}}$
Relative at the present moment	**Relative at a moment in the past**
(PV_t-PC_t), $\frac{(PV_t-PC_t)}{\frac{(PV_t+PC_t)}{2}}$	$\frac{1}{2}\left[\left(\frac{(PV_t-PC_t)}{(PV_t+PC_t)/2}+\frac{(PV_{t-1}-PC_{t-1})}{\left((PV_{t-1}+PC_{t-1})/2\right)}\right)\right]$
Base only in peaks	**Based on transaction price**
(PV-PC), $\frac{(PV-PC)}{\frac{(PV+PC)}{2}}$	$2\left\lvert PT-\frac{(PV-PC)}{2}\right\rvert$, $2\left\lvert\frac{(PT-PV-PC/2}{PV-PC/2}\right\rvert \times 100$

In Table 1, PC is the purchase price of the request made, PV is the selling price of the request made, PT is the price of the transactions actually performed.

Objectives and hypothesis

- **Objectives**
  - measurement the effect of the IFRS to asymmetry of information
  - understand and model the behavior in time of the bid ask
  - identify and quantify the variables that determine the behavior of the spread

- **Hypothesis**
  - Hypothesis 1: There are significant differences for firms belonging to the IPSA in the study period, in terms of information asymmetry
  - Hypothesis 2: There are significant differences for the sample period, in terms of information asymmetry

Methodology

- Companies traded on the Santiago Stock Exchange
- The data goes from 2007 to 2012, and correspond to data equally spaced with an intraday frequency
- 56 companies with presence in the IPSA
- Econometric univariate time series model (ARCH, GARCH, ARMA)
- Panel data model are used in the analysis

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Results (brief resume)
Univariate time series model (GASCO)

- 9.320 observations
- ARCH (2) (standard deviation as a term of the model equation)

$$Bid\_Ask\_Gasco_t = *0.504520 * @SQRT(GARCH)$$

$$GARCH = 5.56\,E{+}12 + 0.202423 * \mu_{t-1}^2 + 0.06652 * \mu_{t-2}^2$$

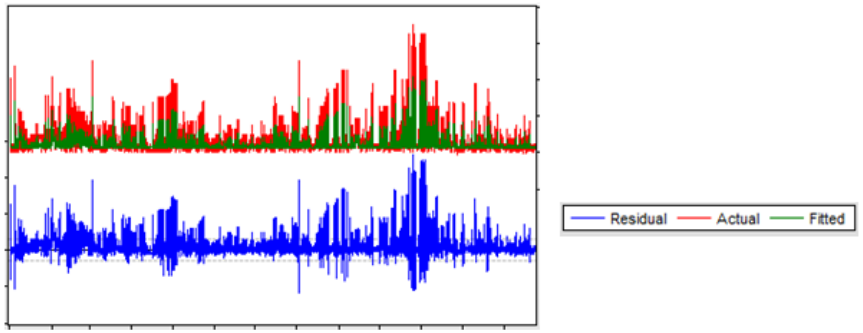
$Bid\_Ask\_Gasco_t$ = (A-B)

(direct difference between ask and bid)

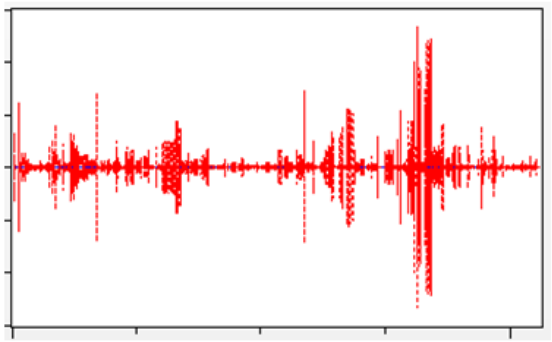
Test hipótesis distribución Logistic residuos Gasco

Method	Value	Adj. Value	Probability
Cramer-von Mises (W2)	31.78816	31.79156	< 0.005
Watson (U2)	31.78816	31.79156	< 0.005
Anderson-Darling (A2)	232.3372	232.3434	< 0.005

Estimación de los residuos para la serie Bid-Ask de Gasco



Pronóstico estático para la serie Bid-Ask de Gasco



Root Mean Squared Error	1464059.
Mean Absolute Error	851996.4
Mean Abs. Percent Error	237.6470
Theil Inequality Coefficient	0.437324
Bias Proportion	0.142101
Variance Proportion	0.398694
Covariance Proportion	0.459205

Results (brief resume)
Univariate time series model

Summary of the models used for the spread of each companie

Companies	Data	Model	Iterations	Spread	R^2	Residue
Salfacorp	58.924	ARMA (4,3)	31	A-B	24%	Exponencial
Aguas Andinas	21.420	GARCH M (1,1)	31	2(A-B)/(A+B)	26%	Extreme-Max
Gasco	9.320	ARCH M (2)	15	A-B	21%	Logística
Cap	279.813	AR (2)	3	lnA - lnB	41%	t de Student
Cintac	18.284	AR (3)	3	lnA - lnB	36%	t de Student
Madeco	95.787	AR (8)	3	lnA - lnB	41%	Exponencial
Cencosud	334.833	AR (3)	3	2(A-B)/(A+B)	37%	t de Student
Masisa	82.603	AR (3)	3	lnA - lnB	37%	t de Student
Falabella	193.438	AR (5)	3	2(A-B)/(A+B)	43%	t de Student
Multifoods	78.780	AR (3)	3	2(A-B)/(A+B)	42%	t de Student

Methodology
Panel data model

- **Endogenous variable**
  - spread (bid-ask) (the annual average of the differences between both prices divided by its average value)

- **Exogenous variables**
  - quantity offered for share sales (Sale_Quant), quantity offered for share purchases (Pur_Quant)
  - two dichotomist variables: IFRS, IPSA
  - five control variables: Leverage, Ln_Assets, P-Bursatil, Own_Inst_Inv_PF, Own_5_Shareholders
  - DIS and Botosan

$$Spread_{it} = \beta_0 + \beta_1 * Pur\_Quant_{it} + \beta_2 * Sale\_Quant_{it} + \beta_3 * IFRS_{it} + \beta_4 * IPSA_{it} + \beta_5 * Leverage_{it} + \beta_6 * Ln\_Assets_{it} + \beta_7 * P\_Bursatil_{it} + \beta_8 * Own\_Inst\_Inv\_PF_{it} + \beta_9 * Own\_5\_Shareholders_{it} + \beta_{10} * DIS_{it} + \beta_{11} * Botosan_{it} + \mu_{it}$$

Methodology
Descriptive analysis

	Mean	Maximum	Minimum	Stand. Dev.	Asymmetry	Kurtosis
Sale_Quant	26683.21	150401.2	1142.669	33196.39	1.791883	5.522053
Pur_Quant	25468.10	162203.1	1193.516	33179.99	1.999314	6.670038
Mean_DIS	0.602124	0.741176	0.482353	0.068438	0.085244	2.473136
Kurtosis_DIS	-0.971111	0.190170	-1.833589	0.475957	0.764296	3.087189
Leverage	0.912788	1.566445	0.509735	0.252914	0.557354	2.782955
Botosan	37.24306	55.50000	25.00000	6.957615	0.372145	2.200716
Ln_ Assets	20.91857	23.10814	Telefónica	1.721432	-2.366565	9.771537
Own_5_Shareholders	69.61917	98.50000	7.690000	18.21537	-0.730911	3.758112
Own_ Inst_ Inv_PF	6.502986	26.47000	0.000000	6.758253	1.115546	3.610577

Source: Authors' calculations.

AGUAS andinas

Results panel data model

Common Effect

Variable	Coefficient	Std. Error	t-Statistic	Prob.
QUANTITY_BUY	-3.44E-05	8.30E-06	-4.143303	0.0001
QUANTITY_SELL	3.40E-05	8.24E-06	4.128016	0.0001
IFRS	-0.004353	0.001625	-2.678408	0.0080
IPSA	-0.005225	0.001369	-3.816237	0.0002
LN_ACTIVOS	-0.001143	0.000359	-3.180144	0.0017
P_BURSATIL	-0.000327	3.73E-05	-8.779537	0.0000
QCG_BOTOSAN	-0.000102	5.81E-05	-1.757172	0.0804
C	0.077864	0.007439	10.46759	0.0000

Period Effect

Variable	Coefficient	Std. Error	t-Statistic	Prob.
QUANTITY_BUY	-2.76E-05	8.05E-06	-3.427646	0.0007
QUANTITY_SELL	2.73E-05	8.00E-06	3.412585	0.0008
IPSA	-0.005108	0.001312	-3.894678	0.0001
LN_ACTIVOS	-0.001155	0.000333	-3.473765	0.0006
P_BURSATIL	-0.000354	3.63E-05	-9.759393	0.0000
QCG_BOTOSAN	-8.48E-05	5.26E-05	-1.611604	0.1087
C	0.076158	0.007094	10.73559	0.0000

Effects Test	Statistic	d.f.	Prob.
Period F	9.807354	(3,194)	0.0000
Period Chi-square	28.805713	3	0.0000

Cross-Section Effect

Variable	Coefficient	Std. Error	t-Statistic	Prob.
QUANTITY_BUY	-0.000117	2.09E-05	-5.630246	0.0000
QUANTITY_SELL	0.000117	2.08E-05	5.623665	0.0000
LEVERAGE	-0.000611	0.000237	-2.577651	0.0109
P_BURSATIL	-0.000326	4.33E-05	-7.524734	0.0000
QCG_DIS	-0.136902	0.023313	-5.872337	0.0000
C	0.124094	0.014648	8.471540	0.0000

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.424067	(53,149)	0.0000
Cross-section Chi-square	223.555506	53	0.0000

Random Effect

Variable	Coefficient	Std. Error	t-Statistic	Prob.
QUANTITY_BUY	-5.13E-05	1.04E-05	-4.937569	0.0000
QUANTITY_SELL	5.08E-05	1.03E-05	4.923513	0.0000
IFRS	-0.004764	0.001296	-3.677217	0.0003
IPSA	-0.003178	0.001301	-2.442362	0.0155
LN_ACTIVOS	-0.001644	0.000467	-3.521543	0.0005
P_BURSATIL	-0.000361	3.52E-05	-10.25983	0.0000
QCG_DIS	-0.014513	0.008940	-1.623365	0.1061
C	0.095993	0.010298	9.321321	0.0000

Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	57.802909	7	0.0000

Conclusions

- We have used different models to measure the relation:
  - variables related to the quality of corporate governance, control variables, and the spread
- To validate the above relations were used different measures of spread, each of them runed with different econometric models
- Regarding the paper's hypotheses:
  - significant differences from the year 2009 (inclusive) for the sample firms (hypothesis 2)
  - significant differences for 54 of the 56 companies in the sample (hypothesis 1)

Regulatory changes made in Chile from the law Nro. 20,448 published on August 13, 2010. Adoption of IFRS from the year 2009 by some firms in the sample. Full effect from the year 2010

Conclusions

- In addition, this study can be expanded to include and comparing different industrial sectors
- To the model will be added new variables to capture other aspects, such as, risk measurements

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